



Pain and self-assessed health: Does the association vary by age?



Sara Rubin^{*}, Zachary Zimmer

University of California, San Francisco, Department of Social and Behavioral Sciences, 3333 California Street, L-Hts, 455, Box 0612, San Francisco, CA 94118, United States

ARTICLE INFO

Article history:

Available online 18 February 2015

Keywords:

Pain
Self-assessed health
NHANES
Age cohorts
Social construction of health
Ordered logit
Medical conditions

ABSTRACT

The association between pain and self-assessed health among adults age 20 and older is examined with data from the 2003–2004 National Health and Nutrition Examination Survey, a cross-sectional nationally representative survey of the civilian, non-institutionalized US population. Models emphasize whether and how the association differs across age cohorts. 5032 respondents age 20 and older were asked about their experience with pain. Responses are used to create two different pain measures: general and site-specific. Self-assessed health is categorized into groups that are ordered from fair/poor to excellent. Bivariate analyses and ordered logistic regressions reveal pain, measured both ways, have robust inverse associations with self-assessed health. Associations remain robust after adjusting for a series of health conditions and indicators plus demographic, socioeconomic and social support characteristics. Models test the effect of age by pain interactions on self-assessed health and confirm substantial variation across cohorts. Those of middle-age, 40–59, display the strongest association while self-assessed health is virtually unassociated among older–old, those 80 and older. Findings suggest that the way pain impacts self-assessed health varies by age cohort. Conclusions discuss the importance of considering pain as a health condition and the implications of the findings for well-being across age cohorts.

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1. Introduction

This study examines the link between pain and self-assessments of health among a sample 20 and older from the National Health and Nutrition Examination Survey (NHANES). It gives specific attention to how the link varies across age cohorts. Self-assessments of health are drawn from a survey question that asks, “How would you rate your overall health?” with response categories: excellent, very good, good, fair, and poor. A substantial body of literature indicates this measure represents a valid, inclusive and holistic conception of health (Kaplan and Camacho, 1983; Idler, 1993; Krause and Jay, 1994; Menec et al., 1999; Molarius and Janson, 2002). Responses to a self-assessment of health reflect not just current physical conditions but also aspects of mental and social well-being (Linn and Linn, 1980; Mossey and Shapiro, 1982; Idler and Kasl, 1991; Rakowski et al., 1991). An empirical difference between self-assessed health and many other measures of health is that the former refers to a global assessment whereas other health measures often relate to specific medical conditions.

Self-assessments of health in the current study are hypothesized to vary based on the experience of pain measured two ways. General is non-site specific pain lasting for twenty-four hours or more experienced within the month leading up to time of interview. Specific is one or more of neck, low back, joint pain, or headache, experienced within the last year or three months (depending on the specific site). Like self-assessed health, pain can be an amorphous and unstructured health concept impacted upon by a wide range of chronic and psychosomatic disorders. The origin of pain can be difficult to identify and it can be chronic and/or acute (Young et al., 2003). There can be variation in the ways in which individuals react to and define pain (Pincus et al., 2002; Racine et al., 2012). Moreover, it can be difficult to determine how general and specific pain associate with other indicators of well-being that might be mentally, physically or socially constructed (Andersson et al., 1993; Hartvigsen et al., 2004; Soklaridis et al., 2010). Yet like self-assessed health, pain may be a broad indicator of health. Hence, it is surprising that, with a few notable exceptions (Reyes-Gibby et al., 2002; Mäntyselkä et al., 2003; Siedlecki, 2006), there has been little research to date that links pain and self-assessed health. The current study seeks to advance the literature by considering the association adjusting for a large number of health and non-health covariates in an attempt to isolate the

^{*} Corresponding author.

E-mail address: sara.rubin@ucsf.edu (S. Rubin).

independent impact of pain. Because past research has indicated that ratings of self-assessed health vary by age (Idler and Angel, 1990; Idler, 1993), we examine the association across broad age groups, from the young to older–old.

2. Background

While a survey question about self-assessed health can appear subjective and simplistic, it has proven to be a robust predictor of other health outcomes such as mortality, and has a stronger association with objective health measures than characteristics such as age, medical conditions, socio-demographic and economic status (Linn and Linn, 1980; Mossey and Shapiro, 1982; Idler, 1993; Dowd and Zajacova, 2007; Atherton et al., 2012). It has been advocated as a reliable and valid measure of overall health (Manderbacka et al., 1999; Idler and Benyamini, 1997). Since it has proven to offer insight into the totality of health, researchers have for decades been attempting to understand how self-assessed health is formed. A wide selection of covariates in addition to other health measures correlate with self-assessed health, such as demographic characteristics, socioeconomic status and social support (Kaplan and Camacho, 1983; Frankenberg and Jones, 2004; Idler, 1993; Krause and Jay, 1994; Kawachi et al., 1999; Menec et al., 1999; Molarius and Janson, 2002; Schulz et al., 2006; Dowd and Zajacova, 2007). Cultural variation in the measure has been revealed (Jylhä, 2009; Ostrove et al., 2000; Zimmer et al., 2000; Dowd and Zajacova, 2007). For instance, research has indicated that persons with similar health conditions will subjectively assess their health differently depending on country of residence or ethnic background. Important for the current study, research has indicated a relationship between age and self-assessments of health with older persons tending to provide more favorable assessments *ceteris paribus* (Idler and Angel, 1990; Idler, 1993). On balance this wealth of research suggests that while it is a valid and reliable measure, how someone self-assesses their health is dependent upon a range of characteristics that include physical and psychosocial aspects.

Pain has been shown to negatively associate with various health outcomes (Von Korff et al., 2005) and its impact on psychological health is robust (Banks and Kerns, 1996; Magni et al., 1994; Ahmedzai, 1995). Studies have indicated pain varies across social, economic and demographic characteristics (Andersson et al., 1993; Hemingway et al., 1997; Elliott et al., 1999; Pincus et al., 2002; Hartvigsen et al., 2004; Krueger and Stone, 2008; Soklaridis et al., 2010; Racine et al., 2012). Contrary to some expectations, studies have shown the prevalence of pain plateaus or decreases after middle-age (Andersson et al., 1993; Krueger and Stone, 2008). While certain groups may experience pain more frequently than others, there is also evidence that the tendency to report pain and the way in which it is reported differs across population characteristics, like age, race and sex (Turk and Okifuji, 1999; Weisse et al., 2005; Cano et al., 2012), making the reporting of pain, like self-assessed health, partly psychosocially determined.

A few earlier studies indicate an association exists between pain and self-assessed health (Reyes-Gibby et al., 2002; Mäntyselkä et al., 2003; Siedlecki, 2006). Reyes-Gibby et al. (2002) examine data from the Asset and Health Dynamics Among the Oldest Old Data (AHEAD) and indicate a negative association between persistent pain and self-assessed health in adults aged 70+. Mäntyselkä et al. (2003) compared two age cohorts in Finland (age 15–44 and age 45–74), and found age variation, with chronic pain having a stronger association for the younger age cohort. Siedlecki (2006) found low levels of power or autonomy and high levels of depression to be more important predictors of self-assessed health than chronic pain.

This earlier research notwithstanding, important questions remain. On a basic level, there is need to validate the small number of earlier studies that exist. Many subtleties in the relationship between pain and self-assessed health have yet to be explored, and it is these nuances that will help us to better understand how self-assessments of health are reliant upon psychological and social determinants. For instance, more information is needed as to the extent to which associations are a function of or external to the presence of specific health conditions. In the current study, we adjust for chronic conditions, mental health and health care utilization. Moreover, to isolate the impact of pain on self-assessed health, controls are added for socio-demographic, economic and social support measures. The latter have been absent from earlier studies despite a well-recognized association between social support and health (Kaplan and Camacho, 1983; Kawachi et al., 1999). Furthermore, previous studies have mostly been limited to studying populations of older adults. Research shows pain is a common experience at all ages (Idler and Angel, 1990; Idler, 1993; Krueger and Stone, 2008). But there are reasons the association could differ across age cohorts. For instance, underlying causes of pain differ between older and younger individuals as does the frequency of medication in-take, which could impact the way in which pain is experienced and perceived (Andersson et al., 1993; Krueger and Stone, 2008).

This study asks three questions: Is there an association between pain and self-assessed health? Is the association between pain and self-assessed health diminished after account is taken for a large number of more objective health measures, demographic, socioeconomic and social support covariates? Do these associations differ across age cohorts?

3. Methods

3.1. Data

Data come from the National Health and Nutrition Examination Survey (NHANES), the purpose of which is to assess and monitor health and nutritional status of adults and children in the United States. NHANES is cross-sectional employing a stratified, multistage probability design that results in a nationally representative sample of the civilian, non-institutionalized US population (Center for Disease Control and Prevention, 2014). Beginning in 1999, it has been conducted on a continuous cycle with different waves including specific topics or population groups. Each wave contains some non-repeated items. Data for the current analysis come from 2003–2004 NHANES, which included a module on pain. Questions about pain were asked of 5032 respondents aged 20 and older. In this wave of NHANES, selected items about social support, some of which are included in the current analysis, were asked of those aged 40+. Most of our analyses are based on the full sample, but when including social support the sample is reduced to 3293. NHANES 2003–2004 oversampled persons aged 60+. All procedures that we show apply weights that adjust for this oversampling.

3.2. Measures

The self-assessed health question asked: “Would you say your health in general is excellent, very good, good, fair, or poor?” Because a small proportion (3%) assessed their health as poor, this category was combined with fair. Categories were arranged from least to most favorable (poor/fair to excellent) and treated as ordered in the multivariate models.

A number of items assess musculoskeletal pain. Kamaleri et al. (2008) make a case for distinguishing widespread and localized

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